



PERPUSTAKAAN UMP



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INTERACTIVE COURSEWARE FOR
SPANISH LANGUAGE

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MULTIMEDIA TECHNOLOGY)

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ABSTRACT

The conventional way in language teaching and learning is using book module, teacher centered learning, and self-learning using online vocabulary. Nowadays, the method for language teaching and learning using multimedia become popular. There are several disadvantages of learning language using conventional way such as the learners have to imagine the words that they learn without feeling the situation of usage.

Multimedia can allow the student to learn through cognitive strategies where steps are carefully taken to process linguistic and sociolinguistic contents. These include selecting information from incoming data, comprehending it, storing it, and retrieving it for later use.

The main aim of this project is to develop an interactive 3D courseware for Spanish. 3D technology implementation for the use of education is still fairly new despite the technological advances in 3D modelling. With this courseware, learners of the Spanish language could learn the language via 3D walkthrough. The purpose of this report is to outline and describe the methods and development process of the aforementioned project.

ABSTRAK

Cara konvensional dalam pengajaran dan pembelajaran bahasa adalah menggunakan modul buku, pembelajaran berpusat guru, dan pembelajaran sendiri menggunakan sumber dalam Internet. Pada masa kini, kaedah pengajaran dan pembelajaran bahasa menggunakan multimedia menjadi semakin popular. Walaupun demikian, terdapat juga beberapa kelemahan bahasa pembelajaran menggunakan cara konvensional, seperti pelajar perlu membayangkan kata-kata yang mereka belajar tanpa merasai keadaan dan cara penggunaan.

Multimedia boleh membenarkan pelajar belajar melalui strategi kognitif di mana langkah-langkah secara kreatif diambil untuk memproses kandungan linguistik dan sosiolinguistik. Ini termasuk memilih maklumat daripada data yang masuk, memahaminya, menyimpannya, dan mendapatkan semula untuk kegunaan kemudian.

Tujuan utama projek ini adalah untuk membangunkan satu perisian 3D interaktif untuk Bahasa Sepanyol. Pelaksanaan teknologi 3D untuk kegunaan pendidikan masih agak baru walaupun terdapat banyak kemajuan teknologi dalam pemodelan 3D. Dengan perisian ini, pelajar bahasa Sepanyol boleh belajar bahasa melalui *3D walkthrough*. Tujuan laporan ini adalah untuk menggariskan dan menerangkan kaedah dan proses pembangunan projek yang disebutkan tadi.

INTERACTIVE 3D COURSEWARE FOR SPANISH LANGUAGE

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Abstract—Education has often been said to be “boring” and “dull” by the younger generations. Hence, with the use of multimedia, students can now have fun while learning.

I. INTRODUCTION

The proposed interactive 3D courseware for Spanish language is based on a two-way interaction which includes the eyes, ears, and hand via haptic technology, where the user could interact with the created virtual environment through the sense of touch. Learners can walkthrough inside the given situation to explore each of the things in the virtual reality environment and get the translation of words when learning the respective languages. It will be a PC-based software for Windows platform and implements a virtual reality walkthrough environment.

II. BACKGROUND

The conventional way in language teaching and learning is using book module, teacher centered learning and self-learning using online vocabulary. Nowadays, the method for language teaching and learning using multimedia become popular. There are several disadvantages of learning language using conventional way such as the learners have to imagine the words that they learn without feel the situation of usage. Multimedia can allow the student to learn through cognitive strategies where steps are carefully taken to process linguistic and sociolinguistic contents. These include selecting information from incoming data, comprehending it, storing it, and retrieving it for later use.

This research will conduct the development of interactive 3D learning courseware that give learners the possibility of analyzing the same subject or phenomenon from different point of views and create more complete and correct mental models to represent it.

A. PROJECT OBJECTIVES

- i. To design a suitable instructional design for the development of a 3D interactive courseware in learning language.
- ii. To implement the 3D walkthrough in developing the interactive 3D learning language software for Spanish language.
- iii. To analyze the effectiveness of learning language using interactive 3D learning software.

B. SCOPE OF PROJECT

- i. This system only serves the students who are learning the Spanish language in Universiti Malaysia Pahang, Gambang campus.
- ii. This system will be implemented as a standalone personal computer (PC) application.

C. EXISTING SYSTEMS

i. *Babbel*

A fee-based language learning software and e-learning platform that provides beginner and grammar courses, vocabulary lessons, tongue twisters, sayings, and songs.

ii. *Fluenz*

A licensed digital language learning platform that provides supplementary tools, such as practice CDs, downloadable podcasts, and digital Flashcards optimized for iPads and other tablets

iii. *Duolingo*

A free language-learning and crowd-sourced text translation platform which offers an interactive and fun, yet at the same time free-to-use application for its users. It is created like a game, where users gain “skill points” (“coins”) as they complete each lessons.

D. PROBLEMS IN EXISTING SYSTEMS

A trait most system has is that most of it are practice-based. For example, in the software *Fluenz* which we have discussed earlier, users learn a language by doing the exercises in the lessons, and learn as they complete each exercises. It is not wrong to teach users a language this way, but what if the user has totally no background in the language that he/she is learning?

Rarely do we see a system like *Duolingo*, which offers a game-based approach for users to learn a new language. It is not only easy to use, but also encourages users to have fun while learning a new language. Unfortunately, *Duolingo* might become dull and boring after a while, as its interfaces and learning systems are simple and straightforward, and might not offer a good challenge to advanced users.

III. PROPOSED DESIGN

The proposed design to allow students of the Spanish language to learn better is by allowing them to use an interactive 3D courseware. This courseware will cover as many important and basics of the Spanish language as possible while keeping in mind to allow the user to have fun.

A. Methodology

The methodology that will be used will be the ADDIE framework model. The ADDIE model comprises of:

- i. Analysis Phase
User requirements will be obtained via questionnaire and interviews.
- ii. Design Phase
The structure of the courseware, otherwise known as “storyboarding”, will be designed to suit the module proposed by the client.
- iii. Development Phase
The 3D assets to be used in the courseware will be prepared. These 3D assets will be prepared via 3D modeling tools, such as Autodesk Maya and Maxon’s Cinema 4D. After that, they will be imported into Unity, a game developer software, where interaction between the user and these 3D assets will be coded.
- iv. Implementation Phase
Alpha testing and beta testing will be performed before presenting the final product to the client. Both alpha and beta tests will be evaluated and reviewed in order to improve and fix errors encountered while using the courseware.
- v. Evaluation Phase
This phase will be done at the end of each phases mentioned above. This is done to ensure that the desired objectives and output are reached before proceeding to the next phase.

IV. IMPLEMENTATION AND TEST PLAN

A. Implementation

The courseware is developed into 5 modules: Alphabets, Numbers, Living Room, Café, and Classroom. The Alphabets and Numbers modules are developed such that each objects will produce the pronunciation as the user clicked on them. The other modules, which are in the Intermediate category, are developed via 3D walkthrough implementations. Certain objects in the modules can be clicked on to reveal the Spanish name and pronunciation.

B. Test Plan

In order to test and confirm that the courseware abides to the objectives that were previously laid out, a user assessment test was done. A brief summary of the results of the test are outlined below.

- i. 65% of the respondents feels that the graphics are good, which was given a value of 4. As for the colours, 20% feels that the colour is dull.

- ii. 30% of the respondents felt that the loading speed is slow.
- iii. In the test, the respondents are also asked for their recommendations for the courseware. The following are their replies:
 - a. *More scenes. Slower mouse speed.*
 - b. *Use songs to teach alphabets.*
 - c. *Provide more interactable objects.*
 - d. *Mini game.*
 - e. *Slower the sensitivity of the cursor and game entertainment basis.*

V. RECOMMENDATION AND CONCLUSION

There are many ways to improve the courseware. One of them is by producing it for smartphone users (Android and iOS). Another recommendation is to implement mini-games for users to test what they just learned.

This courseware could assist students of the Spanish language to learn better. Whether he or she is a beginner or intermediate in Spanish, the courseware could assist them on their quest to master the language. Through the implementation of various virtual environments, the user could better understand the words they are learning, especially everyday objects. Furthermore, the courseware also allows user to learn the language at their own pace and time.

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1 INTRODUCTION

1.1 Purpose of the Project

1.1.1 Project Background

The conventional way in language teaching and learning is using book module, teacher centered learning and self-learning using online vocabulary. Nowadays, the method for language teaching and learning using multimedia become popular. There are several disadvantages of learning language using conventional way such as the learners have to imagine the words that they learn without feel the situation of usage.

Language learning can never be successful if the learner only learns to memorize of some vocabulary and sentences structures without practice it to the reality environment. However, practicing the secondary language other than mother tongue language is quite difficult especially if the learner practice it their own country. Others, learner will hear word pronunciation from teacher or trainer directly and sometimes the accuracy or tone of trainer's pronunciation can be effect because of the health or volume of sound. The disadvantage of using online vocabulary is it's only dependent on one way interaction, which is it is more to the individual's discipline to understand the languages. Multimedia technology is getting recognized as aid tools for teaching and learning that help students to improve their language skills.

Multimedia can allow the student to learn through cognitive strategies where steps are carefully taken to process linguistic and sociolinguistic contents. These include

selecting information from incoming data, comprehending it, storing it, and retrieving it for later use.

German philosopher, Alexander von Humboldt, has noticed that “A language cannot be taught. One can only create conditions for learning to take place.” [3] Thus, by using multimedia, which is a combination of various elements of text, image, video, audio, and animation in one application, one could certainly create such conditions of effective learning.

The proposed interactive 3D courseware for learning language is based on a two-way interaction which includes the eyes, ears, and hand via haptic technology, where the user could interact with the created virtual environment through the sense of touch. Learners can walkthrough inside the given situation to explore each of the things in the virtual reality environment and get the translation of words when learning the respective languages.

It is a PC-based software for Windows platform. This method of learning can improve the psychomotor skills of the learner to understand the language by exploring the real situation and studying the usage of the words in a virtual reality environment. This proposed courseware can be implemented to any languages as a teaching aid for the language instructor. However, for the case study of this research, the Spanish language has been chosen as the foreign language to be implemented in this courseware.

The propose method which use learning courseware can solve this kind of problem because the accuracy and fluency of pronunciation was recorded and proof by expert in the language. This method is proposed with new technology which embedding interactive 3D and virtual reality walkthrough experience to give more fun in education using edutainment concept. Edutainment is a learning style with combination of education value but with entertainment value. It is designed the content style with mostly

entertaining but embedding with educational information which can improve the level of understanding to user.

In developing this learning courseware, there are some technology embedding into the process such as interactive 3D technology, virtual reality walkthrough experience and other multimedia elements. Interactive 3D is referring to the 3D objects on digital computer-based systems which respond to the user's action by presenting their multimedia elements such as text, audio, video, graphics and animation. Virtual reality walkthrough environment is a real time 3D presentation format for creating imaginary worlds.

There are five main components is virtual reality walkthrough environment which are dimensionality, motion or animation, user's interaction, viewpoint or frame of reference and immersion through enhanced multisensory. Through the virtual reality walkthrough environments, its allow user to navigate or walkthrough in the different situation based on situation for the learning courseware. It is expected that this experience will allow user more enjoyable, fun and easily can understand the language with real objects in virtual environment.

This research will conduct the development of interactive 3D learning courseware that give learners the possibility of analyzing the same subject or phenomenon from different point of views and create more complete and correct mental models to represent it.

1.1.2 Project Objective(s)

- i. To design a suitable instructional design for the development of a 3D interactive courseware in learning language.
- ii. To implement the 3D walkthrough in developing the interactive 3D learning language software for Spanish language.
- iii. To analyze the effectiveness of learning language using interactive 3D learning software.

1.1.3 Scope of Project

This system only serves the students who are learning the Spanish language in Universiti Malaysia Pahang, Gambang campus.

This system will be implemented as a standalone personal computer (PC) application.

1.2 Existing Systems

1.2.1 *Babbel*

1.2.1.1 Introduction

Babbel is a fee-based language learning software and e-learning platform developed by Lesson Nine GmbH and has been available since January 2008. The software currently offers thirteen different languages: English, German, Spanish, Italian, French, Portuguese, Swedish, Turkish, Dutch, Polish, Indonesian, Norwegian, and Danish. Its headquarters is based in Berlin, Germany, and was founded in 2007.

1.2.1.2 Overview

The courses offered in *Babbel* are interactive and can be completed online without interaction.

There are beginner and grammar courses, vocabulary lessons, tongue twisters, sayings, and songs. Certain courses, such as English, provides extra lessons, for example, Business English. Those wishing to learn Spanish can also find an extensive vocabulary lesson that elaborates upon the differences between Spanish speaking countries.

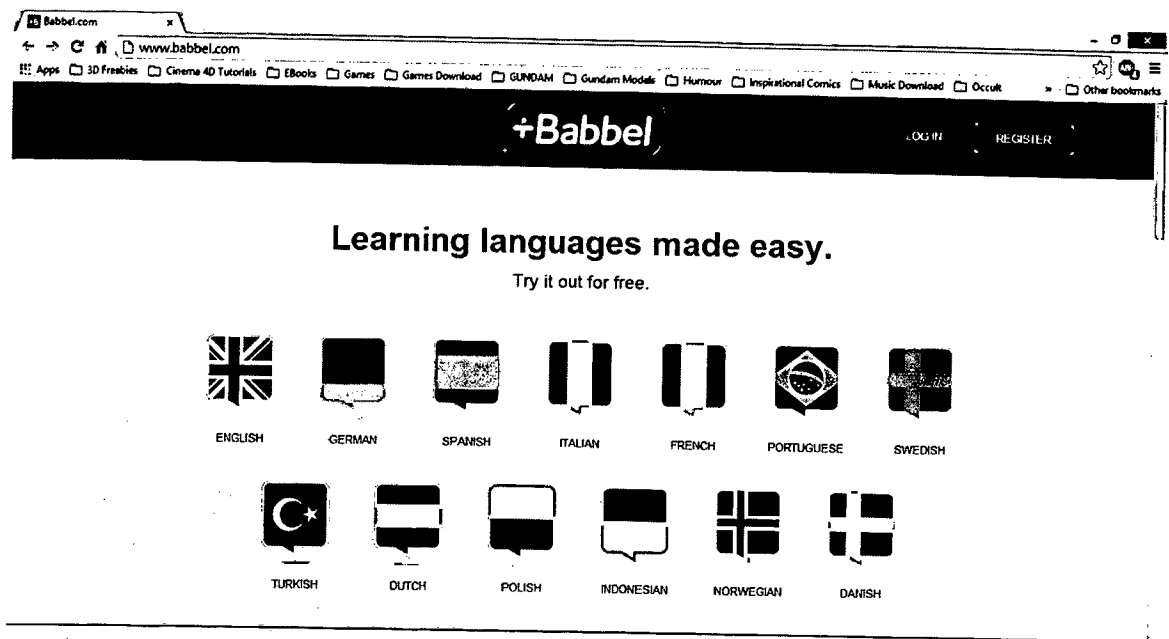


Figure 1.2a Homepage of babble.com.

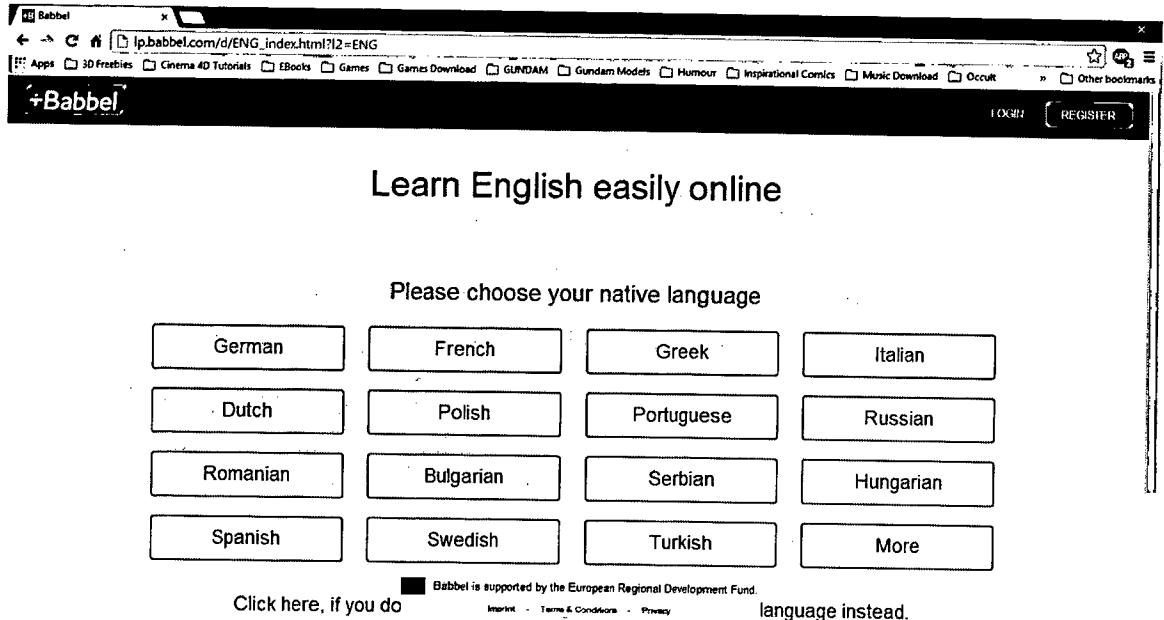


Figure 1.2b Native language selection page if user chose to learn English.

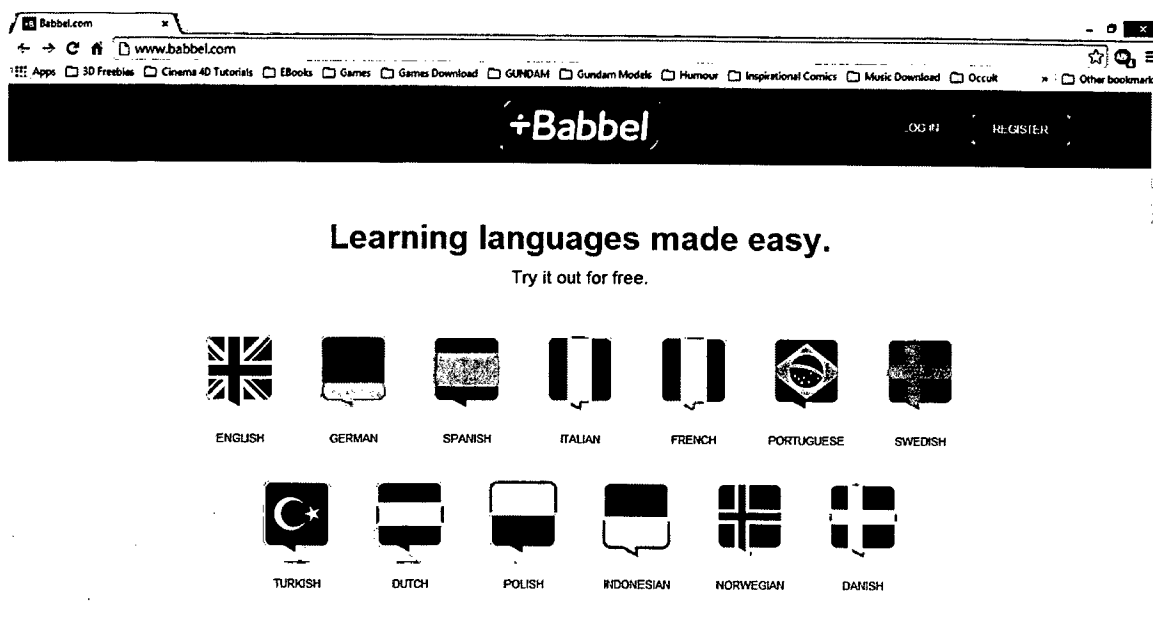


Figure 1.2a Homepage of babble.com.

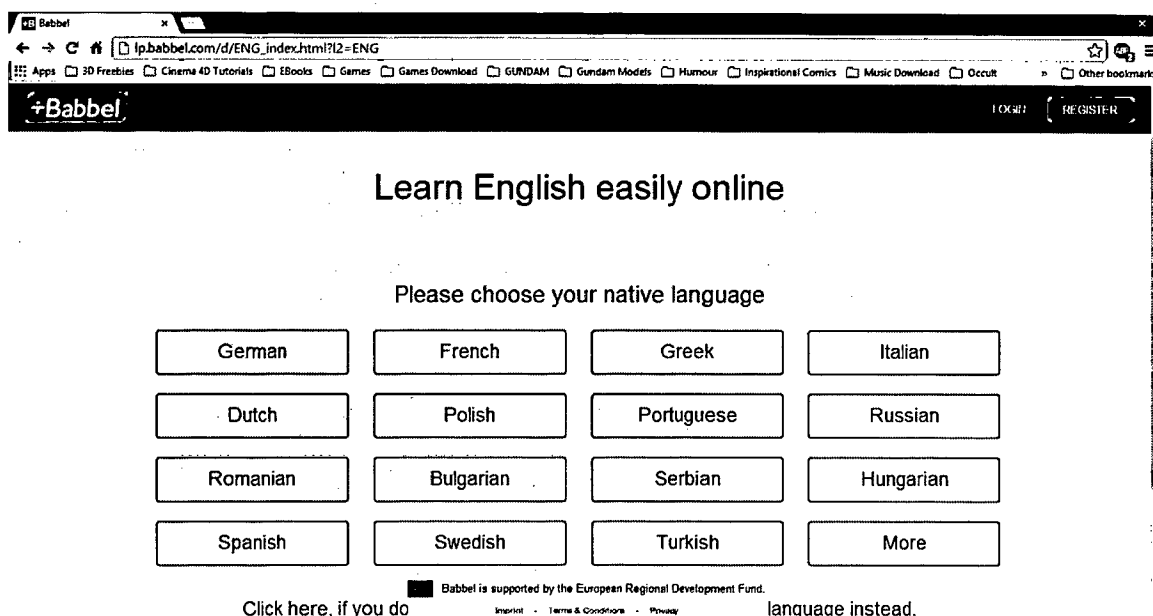


Figure 1.2b Native language selection page if user chose to learn English.

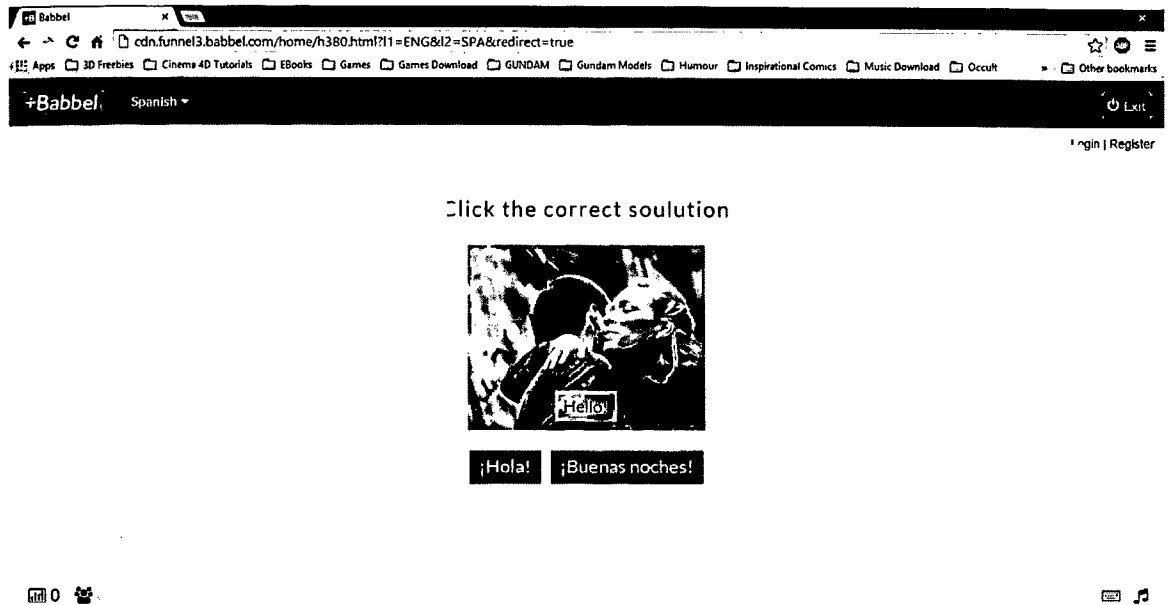


Figure 1.2c Spanish language for Beginner.

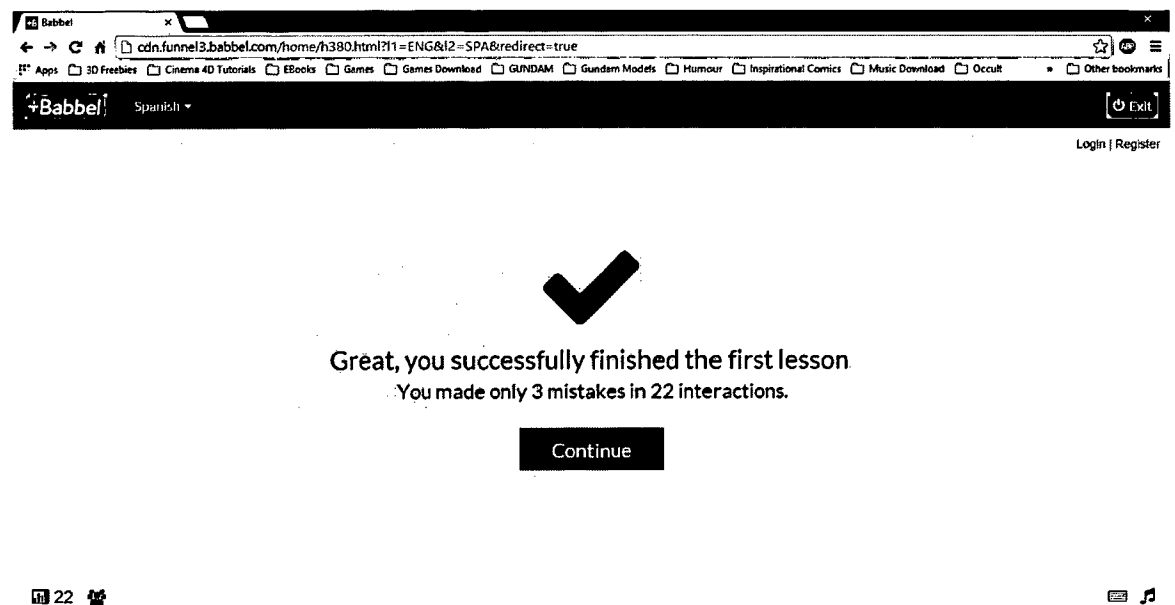


Figure 1.2d At the end of the lesson, the system will display the user's result.

1.2.1.3 Advantages and Disadvantages

According to a review by Jill Duffy on PCMag [7], the software is an “inexpensive online language-learning program”. She also commented that its “speech-recognition technologies are well implemented” and “blends listening, reading, writing, and speaking”.

On the downside, the “quantity of content”, or lessons provided, “varies by language” and there are “no real-time web classes”. This provides a problem for users who wish to interact with actual speaker of the language.

The author concluded that “for an inexpensive and little-known language learning program, *Babble* exceeds expectations, delivering high quality courses for anyone who doesn’t mind an online-only program.”

1.2.2 *Fluenz*

1.2.2.1 Introduction

Fluenz is a licensed digital language learning platform developed by Fluenz Inc., which is a United States entrepreneurial company. The software is available for desktop PC, laptop, iPad, iPod, and audio CD. It offers various language for the user to learn, from Spanish, French, Italian, to Mandarin, German, Portuguese, and many more.

1.2.2.2 Overview

Each *Fluenz* program is available to users for installation on computers via DVDs as well as full access to an online platform. This online platform provides supplementary tools, such as practice CDs, downloadable podcasts, and digital Flashcards optimized for iPads and other tablets.

Fluenz uses real explanations. The system states that each language should be taught differently, according to the languages own logic and structure as much as the learner's language itself. The system must also be useful on day one. The emphasis here is on getting learners to start learning those few words and structures that will allow them to communicate the most in the least amount of time, taking into consideration which words are easier to remember for English speakers, which expressions make the most logical sense and useful to them. *Fluenz* assures on their website, “You’ll be able to order coffee on day one”.

Furthermore, *Fluenz* also provides a virtual tutor to provide the user with tips, tricks, and motivation that will make the difference all throughout the program. There are no games, just real learning. The system only provides real practice that ties in to the step-by-step explanations.

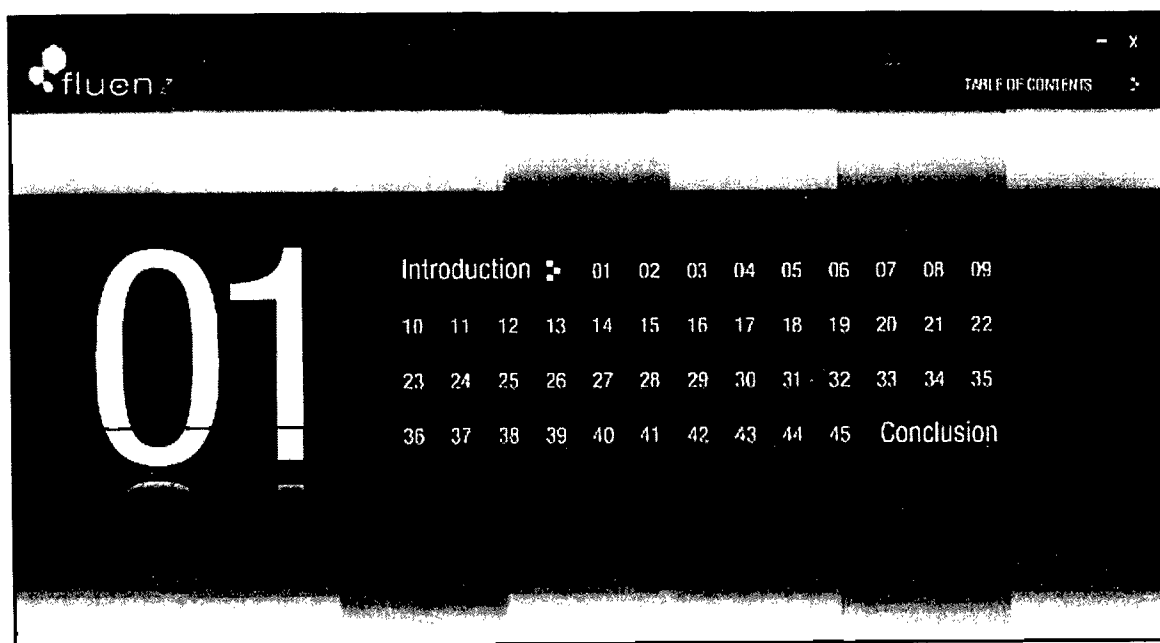


Figure 1.2e Homepage of Fluent that tracks the user's progress.

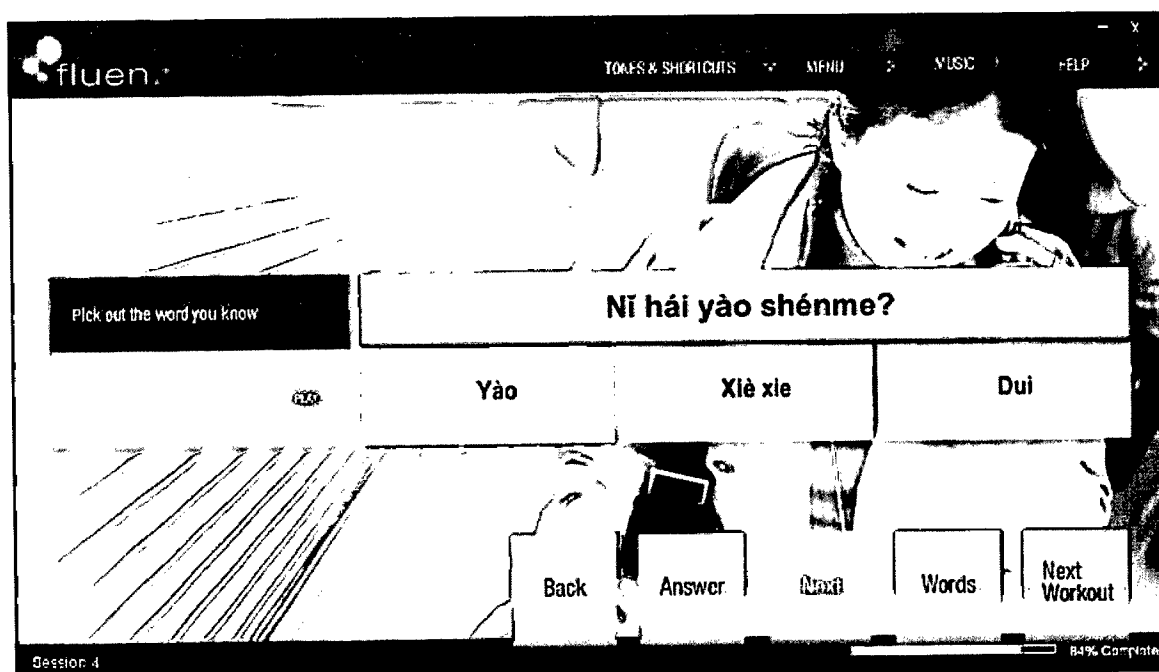


Figure 1.2f Chinese language learning content. User can choose to use Fluent with or without a microphone.

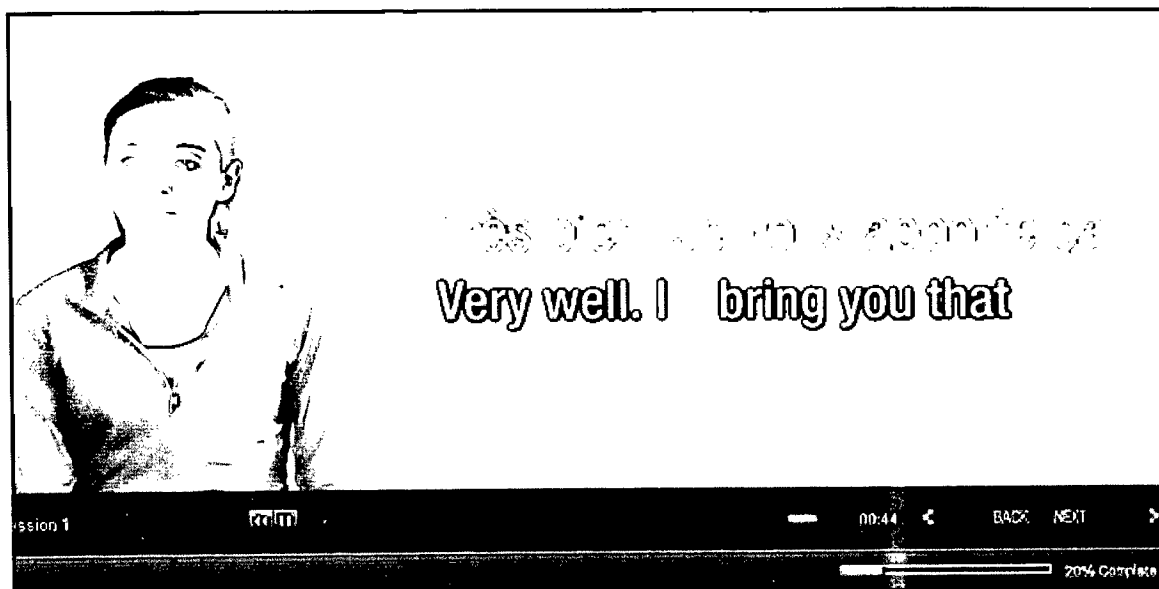


Figure 1.2g A virtual guide is provided at the start of each lesson to introduce and explain each workouts and concepts.

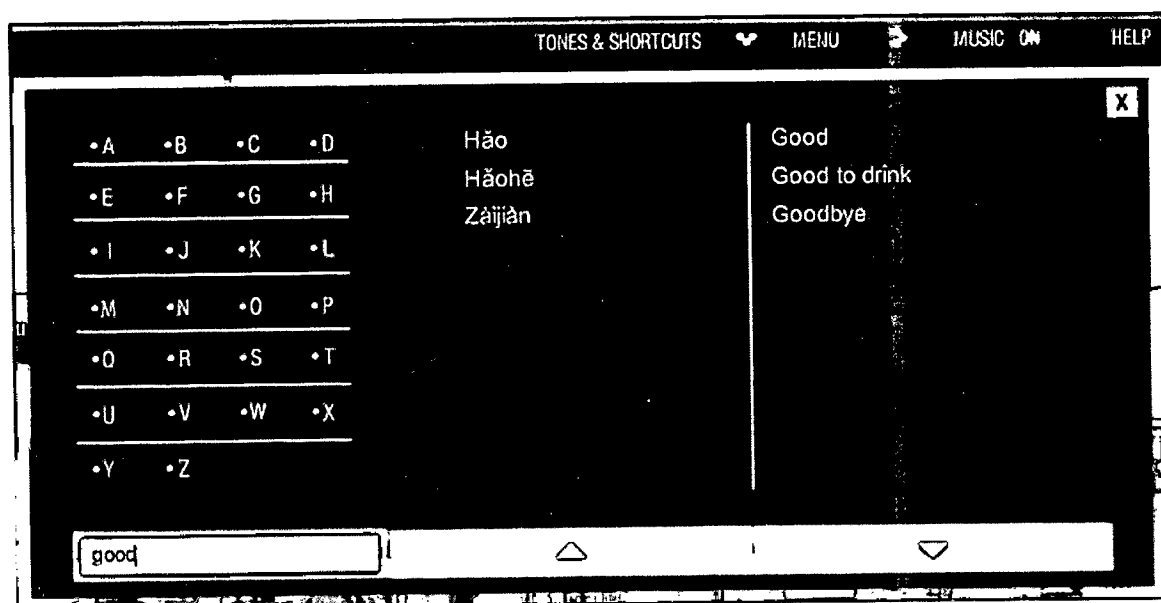


Figure 1.2h Users must get each items correct before they can proceed. That is why each screen has an option to look up words and reveal the answer.

1.2.2.3 Advantages and Disadvantages

According to a review by Jill Duffy on PCMag [8], *Fluenz* is excellent for beginners. It is “well-paced and thorough”. The “full-screen design prevents distractions during lessons”.

Unfortunately, the software is only available in six languages (Spanish, French, Italian, Mandarin, German, and Portuguese). It is also quite difficult to type special characters using keyboard shortcuts, as there are no on-screen selection method.

Jill Duffy concluded that the software “guides new learners through a rigorous and thorough program, adding ample context in English to help the new language not only stick, but also make sense.”